

VISIT...

LANZAROTE
Caliente.COM

in urine $\rightarrow$ **cystathionase** $\rightarrow$ **cystathioninuria** $\rightarrow$ $\rightarrow$ $\rightarrow$

. **urine** $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ **cystathionine** $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$

effects of amino acids $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ **m** **ental retardation**

. **brain** $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ **proteins** $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ **abnormalities**

$\rightarrow$ $\rightarrow$ $\rightarrow$ **essential** $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ **det rich in cysteine** $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$

vit B₆. $\rightarrow$ $\rightarrow$ $\rightarrow$ **vit B₆** $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ **poor in methionine**

tertiary and $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ **proteins** $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ **cysteine** $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ **cysteine**
disulfide $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ **insulin** $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ **quaternary structures of proteins**
bond

. **active site of many enzymes** $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$

. **glutathione** $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$

Glutathione is a hydrogen donor for many

. **disulfide bond** $\rightarrow$ $\rightarrow$ **reduction** $\rightarrow$ $\rightarrow$ $\rightarrow$ **enzymes**

. **peroxidases** $\rightarrow$ $\rightarrow$ $\rightarrow$

. **2 chains of hemoglobin separated** $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$

Glutathione is important for amino acids absorption by glutathione

. **cycle**

detoxification of certain drugs like $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$

. **chromobenzene**

Cysteine is non-essential and glucogenic

sulfur $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ **carbon skeleton from serine** $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ **cysteine** $\rightarrow$ $\rightarrow$
. **from homocysteine**

. **enzymes** $\rightarrow$ $\rightarrow$ **methionine** $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$ **cysteine is essential** $\rightarrow$ $\rightarrow$ $\rightarrow$ $\rightarrow$

Glucogenic by desulfhydrase which remove H₂S into iminopropionate

. **spontaneously to alpha keto acid which is pyruvate** $\rightarrow$ $\rightarrow$ $\rightarrow$

water □ □ □ □ □ □ *amino* □ □

urine sulfate H_2S

AGS and sulfolipids Sulfate donor PAPS

steroid hormones 0000 detoxification of compounds0000 sulfate 000000

. *urine* □ □ □ □ □ □ □ □ □ *soluble* □ □ □ □ □ □ □ *sulfate* □ □ □ □ □ □

decarboxylation □ □ cysteine □ □ □ □ **thioethanolamine** □ □ □ □

CoA and fatty acid synthase complex

□ □ □□□ □□□ □ *taurine* by oxidation then decarboxylation □□ □ □□□ □□□

bilesalts

2amino groups aminoacids cystinuria, urine

solubility cysteine
. polarity cystine 2

. stones hexagonal in shape □ □ □ □ **urine** □ □ □ □ □ □ □ □ □ □ □ □ □ □

alkalization of urine

Cystinosis is also called *cystine storage disease*

cystine transporter in lysosomes called *cystinosin*

renal failure ☐ ☐ ☐ ☐ ☐ ☐ lysosomes ☐ ☐ ☐ ☐

kidney damage issues

Branched chain amino acids

Valine leucine and isoleucine

The 3 are essential

Valine is glucogenic, Leucine is ketogenic, Isoleucine is mixed

branched chain amino acids undergo *transamination with the same enzyme*
to form *alpha keto acid* and *amino acid aminotransferase*

oxidative decarboxylation by dehydrogenase complex converts
1 carbon unit to next lower chain acyl CoA through
decarboxylation

TPP is vitamin B₁

FAD is vitamin B₂

NAD is vitamin B₃

CoA is vitamin B₅

Lipoic acid also is considered as vitamin

Next lower of *valine* gives *propionyl CoA* then *succinyl CoA* then it is
glucogenic.

Next lower of *leucine* gives *acetyl CoA* and *acetoacetate* then it is
ketogenic.

Next lower of *isoleucine* gives *succinyl CoA* and *acetyl CoA* then it is mixed.

ketone bodies are formed by *dehydrogenase complex* in liver
and excreted in *urine*

Maple syrup disease is a genetic defect

characterized by *mental retardation and hyperglycemia*

ketone bodies are formed by *ketone dehydrogenase* in liver
and excreted in *urine*

glycine is a non-essential amino acid

Aspartic acid

Acidic amino acid

ammonia of urea ☐ ☐ ☐ ☐ ☐ urea formation ☐ ☐ ☐ ☐ ☐ ☐

purines and pyrimidines □ □ □□□ □ □□ □□ □□ □□

*α*aloacetate **t**ransamination aspartate

☐ ☒ ☒ ☒ ☒ ☐ ☐☐☐☐☐ ☐☐☐☐ *α*-ketoacetate ☐ ☐ ☐ non essential ☐☐☐☐☐☐ krebs

glucogenic □□□ □□□ □

Aspartate gives asparagine

beta carboxyl group amino group

Asparagine is a site of glycosylation of proteins

glutamine □□□□ □□□□ □□□□ □□□□ □□□□ *amino group* □□

asparagine synthetase with use of ATP □□□ □ □

$\square \square \square \square \square$ $\square \square$ $\square \square \square \square$ $\square \square \square$ DNA $\square \square \square \square \square \square \square \square$ *odon* $\square \square$ *sparagine* $\square \square \square$
proteins

beta alanine □ **asparagine** □□ □□□□ □□□□ **bacteria** □□ □□

Glutamate

alpha ketoglutarate ☐ ☐ *aminotransferase* ☐ ☐

glutamate $\square \square \square \square \square \square$ oxidative deamination

alpha ketoglutarate *dehydrogenase*

reversible reactions

☐ ☐ ☐ ☐☐☐☐ ☒ *alpha keto glutarate* ☐ ☐ ☐ ☐ ☐ *non essential* ☐☐ ☐ ☐☐ ☐ ☐

glucogenic □ □ □ □ □ □

general transamination reactions
deamination of amino acids

Glutamate gives glutamine by using glutamine synthetase

free ammonia source of ammonia

glutamate and ammonia kidney . to fight acidosis